

## CLAIMS

### What is claimed is:

- 1 A transducer, comprising:  
a cylinder located within a housing where the cylinder has an upper edge;  
a diaphragm coupled to the upper edge of the cylinder;  
a voice coil coupled to the cylinder;  
a first surround having a first inner edge and a first outer edge, where the first inner edge is coupled to the cylinder and the first outer edge is coupled to the housing; and  
a second surround having a second inner edge and a second outer edge, where the second inner edge is coupled to the cylinder and the second outer edge is coupled to the housing, and where the first and second inner edges of the first and second surrounds are coupled to the cylinder between the diaphragm and the voice coil.
- 2 The transducer according to claim 1, where the first and second surrounds are substantially similar in shape.
- 3 The transducer according to claim 1, where the first surround has a first outer diameter and the second surround has a second outer diameter, where the first outer diameter is greater than the second outer diameter.
- 4 The transducer according to claim 1, where the voice coil has a pair of lead wires extending out of the housing between the first and second surrounds.
- 5 The transducer according to claim 1, where the first and second surrounds face up.
- 6 The transducer according to claim 1, where the first and second surrounds face down.
- 7 The transducer according to claim 1, where the first and second surrounds face away from each other.
- 8 The transducer according to claim 1, where the first and second surrounds face toward each other.

9. A transducer, comprising:  
a cylinder within a housing;  
a first surround between the cylinder and the housing, where the first surround is coupled to the cylinder and the housing; and  
a second surround between the cylinder and the housing, where the second surround is at a predetermined distance from the first surround and is coupled to the cylinder and the housing.
10. The transducer according to claim 9, further including a lead wire running between the first and second surrounds.
11. The transducer according to claim 9, further including a voice coil coupled to the cylinder.
12. The transducer according to claim 11, where the voice coil is located between the first and second surrounds.
13. The transducer according to claim 11, where the second surround is located between the first surround and the voice coil.
14. The transducer according to claim 9, further comprising a diaphragm coupled to an upper edge of the cylinder.
15. The transducer according to claim 9, where the cylinder has a circular cross-section.
16. The transducer according to claim 9, where the first and second surrounds have a half-circle roll.
17. The transducer according to claim 9, where the first and second surrounds substantially have a parabolic cross-sectional shape roll.
18. The transducer according to claim 9, where the first surround is substantially similar to the second surround.
19. The transducer according to claim 9, where the first surround is substantially symmetrical to the second surround.

20. The transducer according to claim 9, where the first surround is non-symmetrical to the second surround.

21. The transducer according to claim 9, where the first surround has a first roll, and the second surround has a second roll, where the first roll faces down and the second roll faces up.

22. The transducer according to claim 9, where the first surround has a first roll, and the second surround has a second roll, where the first and second rolls face up.

23. The transducer according to claim 9, where the first surround has a first roll, and the second surround has a second roll, where the first and second rolls face down.

24. The transducer according to claim 9, where the first surround has a first roll, and the second surround has a second roll, where the first roll faces up and the second roll faces down-

25. The transducer according to claim 9, where the second surround has a smaller outer diameter than the first surround.

26. The transducer according to claim 9, where the second surround is made of different material than the first surround.

27. The transducer according to claim 9, where the first and second surround have a sinusoidal face.

28. The transducer according to claim 9, where the first surround is coupled to a diaphragm.

29. The transducer according to claim 9, where the cylinder is made of a substantially rigid material.

30. A dual surround transducer assembly, comprising  
a first surround connecting a voice coil with a housing;  
a second surround connecting the voice coil with the housing; and  
where the first and second surrounds are spaced apart from each other.

31. The dual surround transducer assembly of claim 30, further including a voice coil coupled to the cylinder, where the second surround is between the first surround and the voice coil.

32. The dual surround transducer assembly of claim 30, further comprising a diaphragm coupled to an upper edge of the cylinder.

33. The dual surround transducer assembly of claim 30, where the first and second surrounds are substantially similar.

34. The dual surround transducer assembly of claim 30, where the first and second surrounds have a half-circle cross-sectional shape roll.

35. The dual surround transducer assembly of claim 30, where the first and second surrounds have a parabolic cross-sectional shape roll.

36. The dual surround transducer assembly of claim 30, where the first and second surround members have a sinusoidal face.

37. The dual surround transducer assembly of claim 30, where the two surrounds face up.

38. The dual surround transducer assembly of claim 30, where the two surrounds face down.

39. The dual surround transducer assembly of claim 30, where the two surrounds face towards each other.

40. The dual surround transducer assembly of claim 30, where the two surrounds face away from each other.